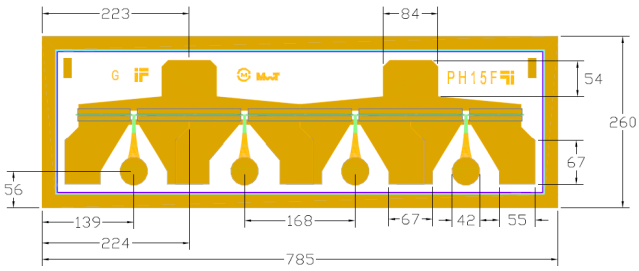
MwT-PH15F

28 GHz Medium Power AlGaAs/InGaAs pHEMT

Features:

- **28.5 dBm typical Output Power at 18 GHz**
- **12 dB typical Small Signal Gain at 18 GHz**
- **45% typical PAE at 18 GHz**
- **0.25 x 630 Micron Refractory Metal/Gold Gate**
- **Excellent for Power, Gain, and High Power Added Efficiency**
- **Ideal for Commercial, Military, Hi-Rel Space Applications**



Chip Dimensions: 785 x 260 microns
Chip Thickness: 100 microns

Description:

The MwT-PH15F is a AlGaAs/InGaAs pHEMT (Pseudomorphic-High-Electron-Mobility-Transistor) device whose nominal 0.25 micron gate length and 630 micron gate width make it ideally suited for applications requiring high-gain and medium power with frequency up to 28 GHz. The device is equally effective for either wideband (e.g. 6 to 18 GHz) or narrow-band applications. The chip is produced using reliable metal systems and passivated to insure excellent reliability.

Electrical Specifications: • *at Ta= 25° C*

PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	MIN	TYP
Output Power at 1dB Compression Vds=8V; Ids=0.7xIDSS	P1dB	18 GHz	dBm		28.0
Saturated Power Vds=8V; Ids=0.7xIDSS	Psat	18 GHz	dBm		28.5
Output Third Order Intercept Point Vds=8V; Ids=0.7xIDSS	OIP3	18 GHz	dBm		34.0
Small Signal Gain Vds=8V; Ids=0.7xIDSS	SSG	18 GHz	dB		12.0
Power Added Efficiency at P1dB Vds=8V; Ids=0.7xIDSS	PAE	18 GHz	%		45

Note: Ids should be between 40% and 80% of Idss. Currently, our data shows Ids at 70% of IDSS. Low Ids will improve efficiency, but high Ids will make Psat and IP3 better.

DC Specifications: • *at Ta= 25 ℃*

PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current Vds= 3.0 V Vgs= 0.0 V	IDSS	mA	150		190
Transconductance Vds= 2.5 V Vgs= 0.0 V	Gm	mS		200	
Pinch-off Voltage Vds= 3.0 V Ids= 1.0 mA	Vp	V		-0.8	-1.0
Gate-to-Source Breakdown Voltage Igs= -0.3 mA	BVGSO	V		-17.0	
Gate-to-Drain Breakdown Voltage Igd= -0.3 mA	BVGDO	V		-18.0	
Chip Thermal Resistance	Rth	C/W		150 350*	

* Overall Rth depends on case mounting

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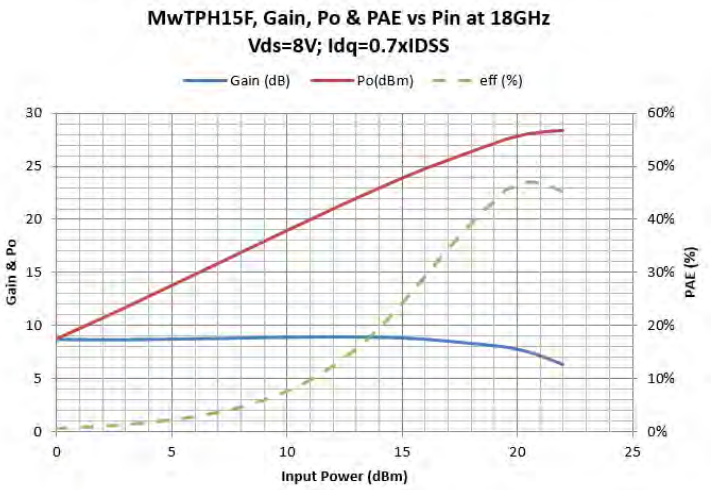

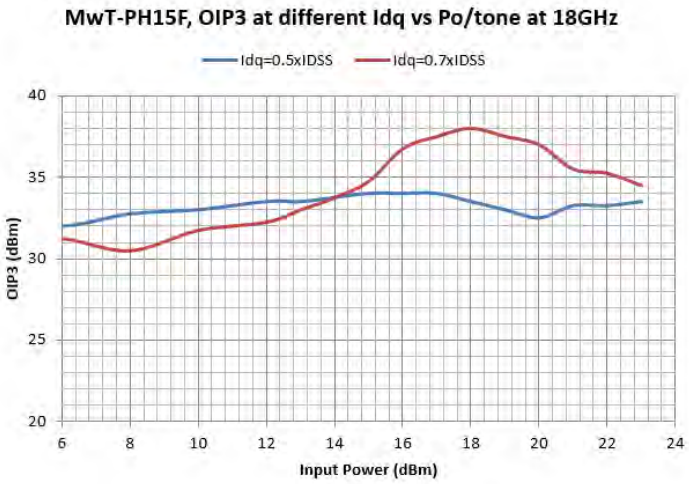

MwT-PH15F, Load Power Data, Vds=8V, Idq=0.7xIdss

Freq (GHz)	Z_S		Z_L		P_{sat}
	Mag	phase	mag	phase	dBm
2	0.60	80.0	0.09	173.3	28.4
4	0.70	120.0	0.19	136.2	28.1
6	0.75	140.0	0.19	143.3	28.4
8	0.87	145.0	0.25	131.7	28.2
10	0.84	160.0	0.29	127.4	28.1
12	0.87	158.0	0.29	131.3	28.5

The load pull data is based on nonlinear model provided by the foundry that processes the device.

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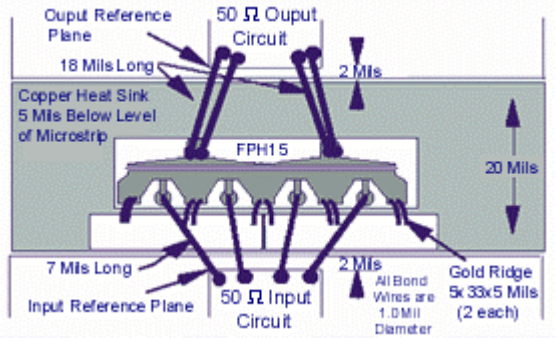
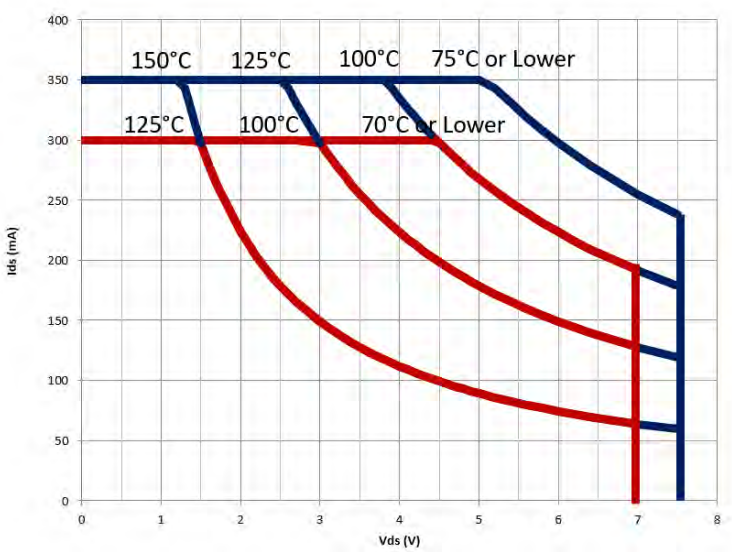
MwT-PH15F
DUAL BIAS



SAFE OPERATING LIMITS vs BACKSIDE TEMPERATURE
MwT-PH15F Chip and 71 Pkg



MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	7.5	8.0
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	200	300
Pt	Total Power Dissipation	mW	1900	2300

Notes:
1. Exceeding any one of these limits in continuous operation may reduce the mean-time- to-failure below the design goal.
2. Exceeding any one of these limits may cause permanent damage.

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